# Digi Connect ME® 9210 Family

**Compact and powerful wired and wireless embedded modules**

**Ultra-compact high-performance embedded modules for M2M networking combine on-chip security and integrated 802.11b/g/n Wi-Fi or Ethernet networking.**

## Overview

The Digi Connect ME 9210 family of embedded modules enables secure wired and wireless networking. Built on Digi's powerful NS9210 ARM9 processor, these high-performance modules allow customers to implement next generation network-enabled products. Additionally, their RJ-45 form factor is pin compatible with modules in the Digi Connect ME family.

These modules can provide future application-specific interface options through the programmable Flexible Interface Module (FIM), while keeping the main serial port or other key peripheral interfaces available. They are well-suited for more advanced core module applications by supporting up to ten shared GPIOs, external IRQs and an extended set of peripheral interface options.

The Digi Connect ME 9210 family features the development and operational benefits of the Digi Device Cloud. This secure, highly-scalable platform seamlessly ties enterprise applications and remote devices together. Using Device Cloud, customers can also easily configure, upgrade, monitor and troubleshoot their devices from a centralized location.

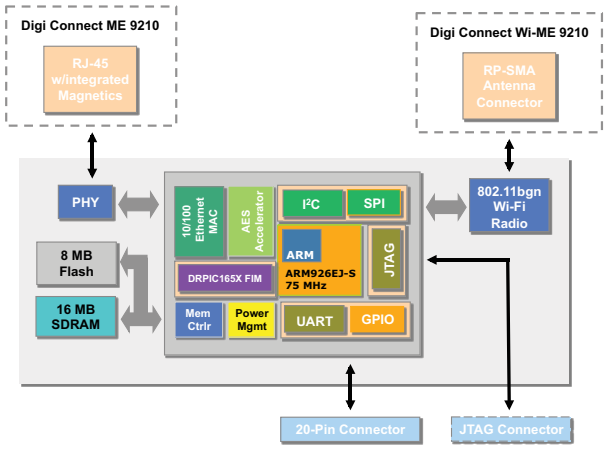
## Platforms and Services

Design Services | Accessory Kits | Support

NET+OS

Supported Software Platforms

## Block Diagram




## Features/Benefits

- Secure 802.11b/g/n Wi-Fi support
- Integrated 10/100 Mbit Ethernet interface
- Support for Digi Embedded Linux and Digi NET+OS
- Industrial operating temperature System-on-Module
- RJ-45 form factor compatible with Digi Connect ME
- On-chip hardware encryption engine
- Extended set of on-chip interfaces and signals
- Power management modes
- Low-emission design (FCC Class B)
- Seamless migration to NET+ARM chip design

## Digi JumpStart Kits® Overview

### Digi JumpStart Kit® for NET+OS

This royalty-free turnkey solution for embedded software development is based on the ThreadX Real-Time Operating System (RTOS), one of the most reliable and field-proven RTOS solutions available. In addition to ThreadX, NET+OS provides the integrated building blocks needed to create product solutions with leading network security using Digi embedded modules and microprocessors.

For professional NET+OS software development, the Eclipse based Digi ESP™ Integrated Development Environment (IDE) with graphical user interface and high-speed USB 2.0 hardware debugger is provided out-of-the-box.

- Royalty-free turnkey solution for embedded software development
- Built on field-proven and compact ThreadX RTOS
- Fully integrated support for secure, IPv4/IPv6 networking applications
- Professional software development using Windows-based Digi ESP IDE

### Digi JumpStart Kit® for Embedded Linux

Built around a standard Linux 2.6 kernel distribution, the Digi JumpStart Kit for Embedded Linux is tailored to the specific needs of embedded Linux development and provides an easy-to-use, complete off-the-shelf embedded development platform. It includes all components that are required to build secure network-enabled products based on the Digi Connect ME 9210 family.

The kit includes Digi ESP™ for Embedded Linux, a powerful and fully Linux-hosted Integrated Development Environment based on the open Eclipse™ framework. Ideal for new and experienced Linux developers, Digi ESP improves software design productivity by accelerating and greatly simplifying driver and application development through a user-friendly graphical interface.

- Off-the-shelf development platform for network-enabled embedded systems
- Royalty-free and with optimized 2.6 kernel and services support
- Linux Digi ESP IDE for accelerated software development
- Full Linux and Digi BSP source code included

Digi Connect ME kits shown

## Digi JumpStart Kits® Contents

| Software Platform | NET+OS | Embedded Linux |
|---|---|---|
| **Module** | Digi Connect ME 9210 or Digi Connect Wi-ME 9210 w/ 8 MB Flash, 16 MB SDRAM | |
| **Development Board** | 1 RS-232 serial port, GPIO configuration switches, screw terminal for GPIO signals, prototyping area, status LEDs (serial, GPIO, power), logic signal header, test points, reset button, user/wake-up buttons, PoE module header, 9-30VDC power supply, JTAG header and RS-232 console/debug port for JTAG-equipped modules | |
| **CD/DVD** | Digi NET+OS CD: NET+OS 7, Digi ESP IDE, BSP source code, sample code, Green Hills MULTI IDE support files, user documentation | Digi Embedded Linux 4 DVD: Digi Embedded Linux, Digi ESP IDE, Linux and platform specific source code, Universal boot loader source code (U-Boot), sample code, documentation |
| **Documentation** | Quick start guide, Digi ESP tutorial, NET+OS porting guide, NET+OS API documentation, Advanced Web Server, hardware reference manual, development board schematics | Quick start guide, Digi Embedded Linux user's guide, hardware reference manual, development board schematics |
| **Power Supplies and Accessories** | External wall power supply (110/240VAC) with interchangeable outlet adapters (North America, EU, UK, and Australia), crossover serial cable, Ethernet cable | |
| **Other** | Digi JTAG Link USB 2.0 hardware debugger | N/A |
| **Kit Part Numbers** | | |
| **Ethernet Only** | DC-ME-9210-NET | DC-ME-9210-LX |
| **WLAN + Ethernet** | DC-WME-9210-NET | DC-WME-9210-LX |

Please refer to the feature specs on our website for detailed information about the specific software platform capabilities.

| Specifications | Digi Connect ME® 9210 | Digi Connect Wi-ME® 9210 |
|---|---|---|
| **Hardware** | | |
| **Processor Type** | 32-bit Digi NS9210 processor | |
| **ARM Core** | ARM926EJ-S | |
| **Processor Speed** | 75 MHz | |
| **Cache** | 4k I/D Cache | |
| **Memory Base Population** | Support up to 8 MB NOR Flash<br>Support up to 16 MB SDRAM | |
| **Flexible Interface Modules (FIMs)** | 300 MHz DRPIC165X CPU; 2k program/192 bytes data RAM | |
| **On-chip 256-bit AES Accelerator** | • | |
| **Power Management Modes** | On-the-fly clock scaling; Low-power sleep modes; Configurable scaling/wake-up events (EIRQ, UART, Ethernet, etc.) | |
| **Pins/Form Factor** | RJ-45 connector style with 20-pin micro pin header (Samtec FTS-110-01-F-DV-TR) | |
| **High-Speed TTL Serial Interface** | Full signal support (TXD, RXD, RTS, CTS, DTR, DSR and DCD); Hardware/Software flow control | |
| **GPIO** | 10 shared; Up to 3 external IRQ options | |
| **SPI** | Master data rate up to 16.7 Mbps; Slave data rate up to 7.5 Mbps | |
| **I²C** | v1.0 bus interface; 7-bit and 10-bit address modes | |
| **Flexible Interface Support (FIM)** | UART, 1-Wire, USB device (low-speed), CAN BUS | |
| **Watchdog Timer (16-bit)** | • | |
| **JTAG Interface** | Available on development modules only | |
| **On-Board Power Supervisor** | • | |
| **Wave-Solderable Design** | No clean flux process | |
| **Dimensions (L x W x H)** | 1.445 in (36.7 mm) x 0.75 in (19.05 mm) x 0.735 in (18.67 mm) | |
| **Network Interface - Wired** | | |
| **Physical Layer** | 10/100Base-T | N/A |
| **Data Rate** | 10/100 Mbps (auto-sensing) | N/A |
| **Mode** | Full- or half-duplex (auto-sensing) | N/A |
| **Connector** | RJ-45 w/ magnetics | N/A |
| **PoE Power Pass-Through** | 802.3af compliant (Mid- and End-span) | N/A |
| **Network Interface – Wireless LAN** | | |
| **Standard** | N/A | IEEE 802.11b/g/n |
| **Frequency** | N/A | 2.4 GHz |
| **Data Rate** | N/A | Up to 65 Mbps with automatic fallback |
| **Modulation** | N/A | CCK (11/5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps), OFDM (6, 9, 12, 18, 24, 48, 54 and 65 Mbps) |
| **Typical Transmit Power** | N/A | +17 dBm |
| **Receive Sensitivity** | N/A | -69 dBm @ 54 Mbps |
| **Connector** | N/A | 1 x RP-SMA |
| **WLAN Security** | | |
| **WEP (Wired Equivalent Privacy)** | N/A | 64/128-bit encryption (RC4) |
| **WPA/WPA2/802.11i** | N/A | 128-bit TKIP/CCMP (AES) encryption.<br>Enterprise mode (802.1X): LEAP (WEP only), PEAP, TTLS, TLS, EAP-FAST, GTC, MD5, OTP, PAP, CHAP, MSCHAP, MSCHAPv2, TTLS-MSCHAPv2. Pre-shared key mode (PSK/Personal). |
| **Environmental** | | |
| **Operating Temperature** | -40° C to +75° C (-40° F to +167° F) -40° C to +85° C (-40° F to +185° F) with external thermal pad* | |
| **Storage Temperature** | -50° C to +125° C (-58° F to +257° F) | |
| **Relative Humidity** | 5% to 90% (non-condensing) | |
| **Altitude** | 12,000 feet (3,658 meters) | |

••Module Feature

*Please see hardware reference manual for detailed information

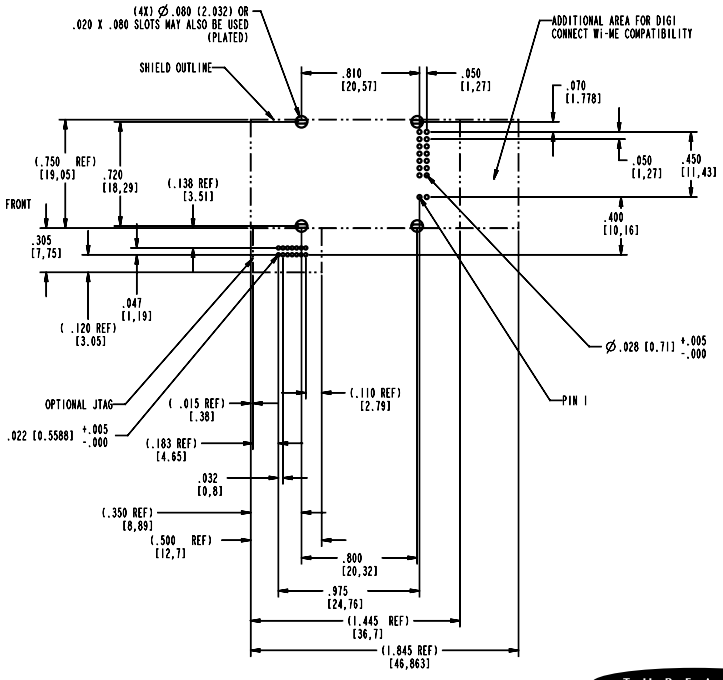
| Specifications | Digi Connect ME® 9210 | Digi Connect Wi-ME® 9210 |
|---|---|---|
| **Power Requirements (3.3 VDC)** | | |
| Maximum | 450 mA (1.485 W) | |
| Typical | 346 mA (1.14 W)<br>UART and Ethernet activated | |
| Idle | 186 mA (613 mW)<br>/16 clock scaling, Ethernet activated | – |
| Sleep | 3.3 VDC @ 34 mA (113 mW) | 3.3 VDC @ 142 mA (486 mW) |
| **Regulatory Approvals** | | |
| FCC Part 15 Class B, EN 55022 Class B | • | |
| EN 61000-3-2 and EN 61000-3-3 | • | |
| ICES-003 Class B, VCCI Class II, AS 3548 | • | |
| FCC Part 15 Sub C Section 15.247 | • | |
| IC RSS-210 Issue 5 Section 6.2.2(o) | • | |
| EN 300 328, EN 301 489-17 | • | |
| UL 60950-1, EN 60950 (EU) | • | |
| CSA C22.2, No. 60950 | • | |
| EN 55024 | • | |
| Intentional Radiation | • | |

• Module Feature

## Module Pinout

| Pin | UART | GPIO | Ext IRQ | I²C | SPI | FIM | Other |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | VETH+ |
| 2 | | | | | | | VETH- |
| 3-6 | Positions removed | | | | | | |
| 7 | RxD | GPIO[3] | | | IN | PIC[3] | |
| 8 | TxD | GPIO[7] | | | OUT | | Timer Out 7<br>Timer In 8 |
| 9 | RTS | GPIO[5] | 3 | | CLK | | Timer Out 6 |
| 10 | DTR | GPIO[6] | | | | | Timer In 7 |
| 11 | CTS | GPIO[1] | 0 | | | PIC[1] | |
| 12 | DSR | GPIO[2] | 1 | | | PIC[2] | |
| 13 | DCD | GPIO[0] | | | EN | PIC[0] | |
| 14 | | | | | | | /RST |
| 15 | | | | | | | 3.3V |
| 16 | | | | | | | GND |
| 17 | | GPIO[12] | | SDA | CLK | | RESET_DONE |
| 18 | | GPIO[9] | 0 | SCL | | | |
| 19 | Reserved | | | | | | |
| 20 | | GPIO[13] | | | CLK | | INIT<br>Timer Out 9 |

## Recommended PCB Layout

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